maximum motor score on the Glasgow Coma Scale (GCS) (OR 1.5; 95% CI 1.4,1.6) had the greatest association with improved neurologic outcome. Longer duration of resuscitation was associate with worse outcomes (OR 0.84, 95% CI 0.82,0.87). The overall performance of our model was excellent with an area under the ROC curve of 0.89 and a Brier statistic of 0.13. **Conclusion:** Our model predicted good neurological outcome with a high rate of accuracy, however external validation of the model is required. This model may be useful in providing initial risk stratification of patients in clinical practice and future research on post-cardiac arrest care.

Keywords: out-of-hospital cardiac arrest, post-cardiac arrest, prognostication

LO17

Major adverse cardiac events in patients ruled-out by a validated high-sensitivity troponin algorithm for acute myocardial infarction

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Introduction: Chest pain and symptoms of acute coronary syndrome are a leading cause of emergency department (ED) visits in Canada. Validated 2-hour high-sensitivity troponin algorithms can rapidly and accurately rule-in or rule-out myocardial infarction (MI) in most patients. The objective of this study was to quantify the incidence and timing of major adverse cardiac events (MACE: MI, death, or urgent revascularization) in the 30-days following the index ED encounter among patients who had MI ruled out using a 2-hour high-sensitivity troponin T (hs-cTnT) algorithm. We also sought to identify patient characteristics associated with very low risk of MACE. **Methods:** This was a secondary analysis of data prospectively collected from adult patients presenting with a primary complaint of chest pain or symptoms of ACS. This analysis focused on patients who had an MI ruled out using a validated 2-hour serial hs-cTnT diagnostic algorithm. Incidence of 30-day MACE was quantified. Sex-specific Kaplan-Meier curves were constructed to describe timing of MACE events after MI rule-out. Demographic and clinical variables of patients who did or did not have MACE were compared using simple bivariable analyses. **Results:** This analysis included 550 patients with serial 2h hs-cTnT testing. Of these, MI was ruled out in 344 (62.5% of patients), ruled in 67 (12.2%), and 139 (25.3%) had non-diagnostic hs-cTnT results. Among the 344 patients who had MI ruled out, 11 (3.2%) experienced a MACE in the 30 days following their index ED encounter. These included 10 (2.9%) unplanned revascularizations and 1 (0.3%) fatal MI. MACE occurred at a median of 5 days (range: 0-23 days) after the index ED encounter. Of the 11 patients experiencing MACE, 9 (81.8%) had a normal ECG at their index ED encounter. None of the 93 (27.0%) ruled-out patients under the age of 50 experienced a MACE in the follow-up period. Patients experiencing MACE were more likely to have a history of coronary disease and multiple vascular risk factors compared to those not experiencing MACE. **Conclusion:** The validated 2h hs-cTnT AMI algorithm ruled-out MI in a large proportion of patients. The 30-day MACE incidence after MI rule-out was 3%. Most MACE events were unplanned revascularizations. We determined that age < 50 was associated with event-free survival and may be of value in identifying patients who do not need additional cardiac testing after MI has been ruled out using high-sensitivity troponin testing.

Keywords: chest pain, high-sensitivity cardiac troponin, rapid rule-out algorithm

LO18

The state of the evidence for emergency medical services (EMS) care of prehospital hypoglycemia: an analysis of appraised research from the Prehospital Evidence-based Practice Program

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Introduction: The Prehospital Evidence-based Practice (PEP) program is an online, freely accessible, continuously updated repository of appraised EMS research evidence. This report is an analysis of published evidence for EMS interventions used to assess and treat patients suffering from hypoglycemia. **Methods:** PubMed was systematically searched in June 2019. One author screened titles, abstracts and full-texts for relevance. Trained appraisers reviewed full text articles, scored each on a three-point Level of Evidence (LOE) scale (based on study design and quality) and three-point Direction of Evidence (DOE) scale (supportive, neutral, or opposing findings for each intervention's primary outcome), abstracted the primary outcome, setting and assigned an outcome category (patient or process). Second party appraisal was conducted for all included studies. The level and direction of each intervention was plotted in an evidence matrix, based on appraisals. **Results:** Twenty-nine studies were included and appraised for seven interventions: 5 drugs (Dextrose 50% (D50), Dextrose 10% (D10), glucagon, oral glucose and thiamine), one assessment tool (point-of-care (POC) glucose testing) and one call disposition (treat-and-release). The most frequently reported study primary outcomes were related to: clinical improvement (n = 15, 51.7%), feasibility/safety (n = 8, 27.6%), and diagnostics (n = 6, 20.7%). The majority of outcomes were patient focused (n = 18, 62.0%). **Conclusion:** EMS interventions for treating hypoglycemia are informed by high-quality supportive evidence. Both D50 and D10 are supported by high-quality evidence; suggesting D10 may be an effective alternative to the standard D50. "Treat-and-release" practices for hypoglycemia are supported by moderate-quality evidence for the patient related outcomes of relapse, patient preference and complications. This body of evidence is high-quality, patient-focused and conducted in the prehospital setting thus generalizable paramedic practice.

Keywords: emergency medical services, hypoglycaemia, prehospital

LO19

AED on the fly: A drone delivery feasibility study for rural and remote out-of-hospital cardiac arrest

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Introduction: Time-to-treatment plays a pivotal role in survival from sudden cardiac arrest (SCA). Every minute delay in defibrillation results in a 7-10% reduction in survival. This is particularly problematic in rural and remote regions, where bystander and EMS response is often prolonged and automated external defibrillators (AED) are often not available. Our objective was to examine the feasibility of a novel AED drone delivery method for rural and remote SCA. A secondary objective was to compare times between AED drone delivery and ambulance response to various mock SCA resuscitations. **Methods:** We conducted 6 simulations in two different rural communities in southern Ontario. During phase 1 (4 simulations) a "mock" call was placed to 911 and a single AED drone and an ambulance were simultaneously dispatched from the same location to a pre-determined destination. Once on scene, trained first responders retrieved the AED

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from the drone and initiated resuscitative efforts on a manikin. The second phase (2 scenarios) were done in a similar manner save for the drone being dispatched from a regionally optimized location for drone response. **Results:** Phase 1: The distance from dispatch location to scene varied from 6.6 km to 8.8 km. Mean (SD) response time from 911 call to scene arrival was 11.2 (+/- 1.0) minutes for EMS compared to 8.1 (+/- 0.1) for AED drone delivery. In all four simulations, the AED drone arrived before EMS, ranging from 2.1 to 4.4 minutes faster. The mean time for trained responders to retrieve the AED and apply it to the manikin was 35 (+/- 5) sec. No difficulties were encountered in drone activation by dispatch, drone lift off, landing or removal of the AED from the drone by responders. Phase 2: The ambulance response distance was 20km compared to 9km for the drone. Drones were faster to arrival at the scene by 7 minutes and 8 minutes with AED application 6 and 7 minutes prior to ambulance respectively. **Conclusion:** This implementation study suggests AED drone delivery is feasible with improvements in response time during a simulated SCA scenario. These results suggest the potential for AED drone delivery to decrease time to first defibrillation in rural and remote communities. Further research is required to determine the appropriate distance for drone delivery of an AED in an integrated EMS system as well as optimal strategies to simplify bystander application of a drone delivered AED.

Keywords: defibrillation, emergency medical services, out-of-hospital cardiac arrest

LO20

The characteristics, clinical course and disposition of long-term care patients treated by paramedics during an emergency call: Exploring the potential impact of community paramedicine

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Introduction: An increasing number of Canadian paramedic services are creating Community Paramedic programs targeting treatment of long-term care (LTC) patients on-site. We explored the characteristics, clinical course and disposition of LTC patients cared for by paramedics during an emergency call, and the possible impact of Community Paramedic programs. **Methods:** We completed a health records review of paramedic call reports and emergency department (ED) records between April 1, 2016 and March 31, 2017. We utilized paramedic dispatch data to identify emergency calls originating from LTC centers resulting in transport to one of the two EDs of the Ottawa Hospital. We excluded patients with absent vital signs, a Canadian Triage and Acuity Scale (CTAS) score of 1, and whose transfer to hospital were deferrable or scheduled. We stratified remaining cases by month and selected cases using a random number generator to meet our apriori sample size. We collected data using a piloted standardized form. We used descriptive statistics and categorized patients into groups based on the ED care received and if the treatment received fit into current paramedic medical directives. **Results:** Characteristics of the 381 included patients were mean age 82.5 years, 58.5% female, 59.7% hypertension, 52.6% dementia and 52.1% cardiovascular disease. On arrival at hospital, 57.7% of patients waited in offload delay for a median time of 45 minutes (IQR 33.5-78.0). We could identify 4 groups: 1) Patients requiring no treatment or diagnostics in the ED (7.9%); 2) Patients receiving ED treatment within current paramedic medical directives and no diagnostics (3.2%); 3) Patients requiring diagnostics or ED care outside current paramedic directives (54.9%); and 4) patients requiring admission (34.1%). Most patients were discharged from the ED (65.6%), and 1.1% died. The main ED diagnoses were infection (18.6%) and musculoskeletal injury (17.9%). Of the patients that required ED care but were discharged, 64.1% required x-rays, 42.1% CT, and 3.4% ultrasound. ED care included intravenous fluids (35.7%), medication (67.5%), antibiotics (29.4%), non-opioid analgesics (29.4%) and opioids (20.7%). Overall, 11.1% of patients didn't need management beyond current paramedic capabilities. **Conclusion:** Many LTC patients could receive care by paramedics on-site within current medical directives and avoid a transfer to the ED. This group could potentially grow using Community Paramedics with an expanded scope of practice.

Keywords: community paramedic, long-term care, reducing emergency department visits

LO21

Consistency of CTAS scores by presenting complaint pre and post eCTAS implementation in 35 emergency departments across Ontario

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Introduction: eCTAS is a real time electronic triage decision-support tool designed to improve patient safety and quality of care by standardizing the application of the Canadian Triage and Acuity Scale (CTAS). The tool dynamically calculates a recommended CTAS score based on the presenting complaint, vital signs and selected clinical modifiers. The primary objective was to assess consistency of CTAS score distributions across 35 emergency departments (EDs) by 16 presenting complaints pre and post eCTAS implementation. **Methods:** This retrospective cohort study used population-based administrative data from January 2016 to December 2018 from all hospital EDs in Ontario that had implemented eCTAS with at least 9 months of data. Following a 3-month stabilization period, we compared data for 6 months post-eCTAS implementation to the same 6-month period the previous year (pre-implementation) to account for potential seasonal variation, patient volume and case-mix. We included triage encounters of adult (≥18 years) patients if they had one of 16 pre-specified high-volume, presenting complaints. A paired-samples t-test was used to determine consistency by estimating the absolute difference in CTAS distribution for each presenting complaint, by each hospital, pre and post eCTAS implementation, compared to the overall average of the 35 EDs. **Results:** There were 183,231 triage encounters in the pre-eCTAS cohort and 179,983 in the post-eCTAS cohort from 35 EDs across the province. Triage scores were more consistent with the overall average after eCTAS implementation in 6 (37.5%) presenting complaints: chest pain (cardiac features) ($p < 0.001$), extremity weakness/symptoms of cerebrovascular accident ($p < 0.001$), fever ($p < 0.001$), shortness of breath ($p < 0.001$), syncope ($p = 0.02$), and hyperglycemia ($p = 0.03$). Triage consistency was similar pre and post eCTAS implementation for the presenting complaints of altered level of consciousness, anxiety/situational crisis, confusion, depression/suicidal/deliberate self-harm, general weakness, head injury, palpitations, seizure, substance misuse/intoxication or vertigo. **Conclusion:** A standardized, electronic

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